

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Amendment of Part 27 of the)	
Commission's Rules to Govern the)	WT Docket No. 07-293
Operation of Wireless Communications)	
Services in the 2.3 GHz Band)	
)	
Establishment of Rules and Policies for)	IB Docket No. 95-91
the)	GEN Docket No. 90-357
Digital Audio Radio Satellite Service in)	RM No. 8610
the)	
2310-2360 MHz Frequency Band		

COMMENTS OF GEORGE BEDNEKOFF

The goal of the following comments is to provide the commission with some feedback from an engineer who helped design several 2.3 GHz WCS products under current regulations. These comments are my own observations independent of any official position of my employer.

The first thing the commission needs to understand is that my product development team designed a family of broadband wireless internet access equipment for the frequency range from 2.3GHz to 2.69GHz. The different requirements for equipment certification at 2.3GHz and 2.5GHz for both the US and international markets are weighed and we attempt to come up with the best cost vs. performance compromise for the largest number of customers. In general, US FCC requirements set the Adjacent Channel Power (ACP) while European ETSI requirements set the wideband noise floor for the transmitter. 2.3GHz WCS equipment is not developed in isolation.

Both the US 2.3GHz WCS band and the US 2.5GHz BRS & EBS band have the same emissions limit for the adjacent channel, $43+10\log(P)$ which hardware engineers translate to -13dBm, and both specify a 1MHz bandwidth for the measurement, but this power is measured differently. Parallel development of equipment for 2.3GHz WCS and 2.5GHz BRS & EBS would be easier if the WCS rule 27.53(a)(4) was changed to match the BRS & EBS rule 27.53(l)(6) so we could

use the same spectrum analyzer settings for both bands. Please consider changing Sec. 27.53(a)(4) to read as follows:

(4) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

This would also bring the 2.3GHz WCS measurements into alignment with those for the 1.9GHz PCS and 1.7/2.1GHz AWS bands.

The ETSI spectrum mask, CEPT/ERC/RECOMMENDATION 74-01E, sets the wideband noise floor for 2.3 to 2.69GHz broadband wireless internet access equipment to -40dBm per MHz for subscriber stations and -50dBm per MHz for base stations. This translates to $70+10\log(P)$ and $80+10\log(P)$. Note that this is for frequencies ± 70 MHz from the carrier frequency with emissions limits equivalent to 10dB easier at ± 28 MHz. The FCC 2.3GHz WCS fixed station emissions limits into the 2.32 to 2.345GHz SDARS band require that the transmitter intermodulation distortion products that dominate ACP drop more rapidly to the noise floor than required for ETSI certification. This is accomplished by reducing the maximum transmitter power for 2.3GHz WCS certification to lower power levels than are used for all other frequency bands and markets for a 2.3 to 2.69GHz family of products.

It is inappropriate for me to recommend specific emissions limits for the 2.3GHz WCS band, but I can give some feedback on the impact of current limits on product development. A transmitter operating in the 2305 to 2310MHz lower A block can meet the 27.53(a)(3) $70+10\log(P)$ emissions limit below 2300MHz, 5MHz frequency separation, with minimal power reduction relative to an equivalent 2.5GHz product. The lack of frequency separation between the WCS C and D blocks and the adjacent SDARS satellite subbands causes even more headaches than the $80+10\log(P)$ fixed station emissions limit. The current $110+10\log(P)$ mobile station emissions limit effectively stops development of mobile products for the 2.3GHz WCS band for the US market.